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Construction and evaluation of a porcine bacterial artificial chromosome library.

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A porcine bacterial artificial chromosome (BAC) library consisting of 103,488 clones has been constructed. The average insert size in the BAC vector was calculated to be 133 kb based on the examination of 189 randomly selected clones, indicating that the library contained 4.4 genome equivalents. The library can be screened by two-step PCR. The first screening step is performed on 22 superpools, each containing 4704 clones (49 x 96 well plates). In the second screening step, 49 plates comprising a superpool are arrayed in a 7 x 7 matrix and 4D-PCR is performed. Screening of the library superpools by PCR for 125 marker sequences selected from different regions of swine genome revealed 123 sequences, indicating that the library is not biased. Subsequent screenings (4D-PCR) were successfully applied for identification of clones containing each marker sequence. This porcine BAC library and the PCR screening system are useful for isolation of genomic DNA fragments containing desired sequences.

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